

1 What is claimed is:

2 1. A gain control circuit in a radio frequency transmission path for an amplifier stage  
3 adjacent and an antenna and having an input terminal, an output terminal and first and  
4 second control terminals comprising:

5 a fixed resistance connected between said input terminal and said output terminal;

6 a first semiconductive circuit connected between said fixed resistance at a level of  
7 reference potential and second semiconductive circuit connected across said fixed  
8 resistance a control terminal of said first semiconductive circuit for connection to a gain  
9 control signal for decreasing resistance of said semiconductive circuit in response to  
10 increase of the radio frequency signal, and a control terminal of the second semi-  
11 conductive circuit connected to complimentary gain control signal for having its  
12 resistance raised and increasing impedance of said gain control circuit in correspondence  
13 with a decrease of impedance said first semiconductive circuit

1 2. The gain circuit of claim 1 where an said first and second semi-conductive  
2 circuits comprise source-drain circuits of first and second CMOS transistors respectively,  
3 and (said control electrode) of each said semiconductive circuit comprises a gate electrode.

1 3. The circuit according to claim 2 wherein said resistance comprises first and  
2 second resistors and said first semiconductive circuit is connected to a terminal  
3 intermediate said first and second resistors.

1 4. The circuit of claim 3 wherein said first and second resistors are of equal value.

1 5. An output signal path and a transmitter comprising a gain control circuit  
2 according to claim 4, a modulation stage output connected to the input terminal of said  
3 gain control circuit and a final stage power amplifier coupled between said output  
4 terminal of said gain control circuit and an antenna.

1 6. A receiver input circuit comprising a gain circuit according to claim 4, an input  
2 fixed amplifier coupled between an antenna and said input terminal and said gain circuit

3 and an amplifier connected between said output terminal of said gain circuit and an input  
4 to a demodulation stage.

1 7. In a direct conversion wireless communication transceiver having an input stage  
2 and an output stage, said input and output stages respectively comprising amplifiers  
3 adjacent an antenna, the improvement wherein said receiver comprises a fixed gain input  
4 amplifier coupled to a gain circuit according to claim 4.

1 8. The improvement according to claim 7 wherein said output stage comprises a  
2 fixed gain amplifier coupled to an antenna and a gain circuit according to claim 4  
3 providing an input to said power amplifier.

1 9. In a direct conversion transceiver comprising an input stage and an output stage  
2 the improvement wherein said output stage comprises a fixed power amplifier connected  
3 to coupled to an antenna and a gain circuit according to claim 4 in providing an input in  
4 to said power amplifier circuit.

1 10. A method for controlling gain and providing a constant impedance in a signal  
2 path comprising the steps of measuring a radio frequency signal to produce a gain control  
3 signal;

4 proportioning said gain control signal into first and second components, to  
5 provide first and second gain control signals;

6 adjusting gain of said <sup>NAB</sup> circuit in accordance with said first control signal;  
7 and changing the impedance <sup>DB</sup> of said circuit in accordance with impedance change  
8 provided by said gain adjustment.

1 11. The method of claim 10 comprising providing first and second fixed resistances  
2 connected between an input terminal and an output terminal of the gain control circuit,  
3 wherein the step of adjusting gain comprises varying conductivity of a source-drain  
4 circuit connected between a terminal intermediate said first and second resistors and  
5 ground inversely with magnitude of the measured radio frequency signal, wherein the  
6 step of adjusting impedance comprising increasing resistance of a source-drain circuit  
7 connected across the first and second resistors.

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